Teacher's Scoring Guide

Grade 8
Mathematics

Fall 2007

Indiana Statewide Testing for Educational Progress

49931-W

INTRODUCTION

During the fall of 2007, Indiana students in Grades 3 through 10 participated in the administration of *ISTEP+*. The test for *ISTEP+* Fall 2007 consisted of a multiple-choice section and an applied skills section. For the fall testing, the multiple-choice section was machine-scored. The applied skills section, which consisted of open-ended questions, was hand-scored.

The test results for both the multiple-choice and applied skills sections were returned to the schools in late November 2007. Copies of student responses to the open-ended questions were returned to the schools in early December 2007. It is the expectation of the Indiana Department of Education that schools will take this opportunity to invite students and parents to sit down with teachers to discuss the results. To support this endeavor, the Indiana Department of Education has prepared the following *Teacher's Scoring Guide*. The purpose of this guide is to help teachers to:

- understand the methods used to score the *ISTEP+* Fall 2007 applied skills section, and
- discuss and interpret these results with students and parents.

In order to use this guide effectively, you will also need the Student Report and a copy of the student's work.

There are two scoring guides for Grade 8, English/Language Arts and Mathematics. In this Mathematics guide, you will find:

- an introduction,
- a list of the Mathematics Grade 7 Indiana Academic Standards,*
- rubrics (scoring rules) used to score the open-ended questions,
- anchor papers that are actual examples of student work (transcribed in this guide for clarity and ease of reading), and
- descriptions of the ways in which the response meets the rubric criteria for each of the score points.

When you review the contents of the scoring guide, keep in mind that this guide is an overview. If you have questions, write via e-mail (istep@doe.state.in.us) or call the Indiana Department of Education at (317) 232-9050.

* Because *ISTEP+* is administered early in the fall, the Grade 8 test is based on the academic standards through Grade 7.

INTRODUCTION TO THE MATHEMATICS APPLIED SKILLS SECTION

The applied skills section that students responded to this past fall in Grade 8 allowed the students to demonstrate their understanding of Mathematics in a variety of ways, such as applying formulas, explaining a solution, transforming a figure, or interpreting a table or graph.

STRUCTURE

The applied skills section for Grade 8 Mathematics was divided into two tests, Test 7 and Test 8. Each test consisted of seven open-ended questions. Students were permitted to use calculators on Test 8 but **not** on Test 7.

SCORING

Each open-ended question was scored according to its own rubric. A rubric is a description of student performance that clearly articulates the requirements for each of the score points. Scoring rubrics are essential because they ensure that all papers are scored objectively. Each rubric for this administration of the *ISTEP+* Grade 8 Mathematics assessment has a maximum possible score of two or three score points.

NOTE: Images of the questions and student work have been reduced to fit the format of this guide. As a result, figures and diagrams in measurement questions will appear smaller in this guide than in the actual test book.

Rubrics are established prior to testing to describe the performance criteria for each score point. The performance criteria determine the number of score points possible for each question. This process ensures that all responses are judged objectively.

1. Students should not be penalized for omitting:

   - degree symbols
   - dollar signs ($) or cent signs (¢)
   - zeros for place holders; for example, either 0.75 or .750 could be used
   - labels for word problems; for example, *miles*

     NOTE: Students WILL be penalized for use of incorrect labels.

2. Students should not be penalized for:

   - spelling or grammar errors
   - using abbreviations; for example, *ft* or *feet* would be acceptable

3. Students should be given credit for:

   - entries in the workspace that indicate understanding of a complete process even if the response on the answer line is incorrect (i.e., the student would receive partial credit for questions with rubrics that allow for scoring the work)
   - answers not written on the answer line; for example, an answer could be given in the workspace or in the explanation (however, in some cases, because of the multiple calculations in the workspace, placement of an answer on the answer line is necessary to determine which response the student intended). Students WILL be penalized for incorrect answers written on the answer line even if the correct answer appears in the workspace.

4. Students should be given credit for:

   - bar graphs with bars of any width
   - bar graphs with either horizontal or vertical bars
   - circle graphs with data presented in any order
   - line graphs only if lines connect the points

CONDITION CODES

If a response is unscorable, it is assigned one of the following condition codes:

A Blank/No response/Refusal
B Illegible
C Written predominantly in a language other than English
D Insufficient response/Copied from text

MATHEMATICS GRADE 7
INDIANA ACADEMIC STANDARDS

- ❑ **Number Sense**
  Students understand and use scientific notation and square roots. They convert between fractions and decimals.

- ❑ **Computation**
  Students solve problems involving integers, fractions, decimals, ratios, and percentages.

- ❑ **Algebra and Functions**
  Students express quantitative relationships using algebraic terminology, expressions, equations, inequalities, and graphs.

- ❑ **Geometry**
  Students deepen their understanding of plane and solid geometric shapes by constructing shapes that meet given conditions and by identifying attributes of shapes.

- ❑ **Measurement**
  Students compare units of measure and use similarity to solve problems. They compute the perimeter, area, and volume of common geometric objects and use the results to find measures of less regular objects.

- ❑ **Data Analysis and Probability**
  Students collect, organize, and represent data sets and identify relationships among variables within a data set. They determine probabilities and use them to make predictions about events.

- ❑ **Problem Solving**
  Students make decisions about how to approach problems and communicate their ideas. Students use strategies, skills, and concepts in finding and communicating solutions to problems. Students determine when a solution is complete and reasonable and move beyond a particular problem by generalizing to other situations.

Problem Solving is identified as a Process Skill in the Indiana Academic Standards. To ensure that the *ISTEP+* questions that assess this Process Skill are grade-appropriate and that the questions use skills that are contained in the standards, these questions are developed by including at least two different indicators from Content Skills in addition to the indicator from the Process Skill. Some of the Content Standards included in the Content Skills are Computation, Geometry, and Algebra. The additional indicators may be from the same or different Content Skills.

The Content Skills used for each of the Process Skill questions in the Grade 8 applied skills section are shown in the following chart.

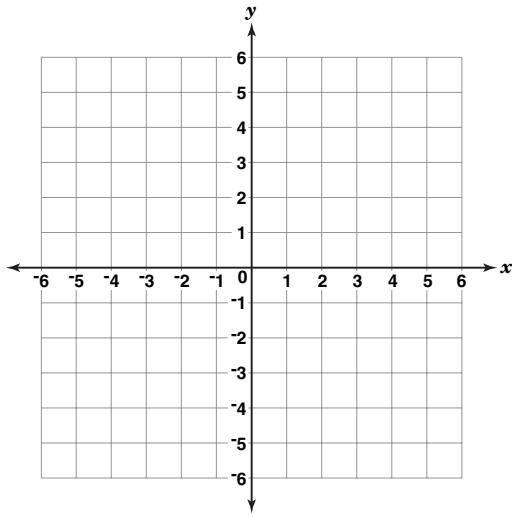
PROCESS SKILL QUESTIONS

Question	Process Skill	Content Skills *Item may map to more than one indicator in a standard.*
Test 7		
5	Problem Solving	Algebra and Functions, Measurement
Test 8		
2	Problem Solving	Geometry, Measurement
4	Problem Solving	Algebra and Functions, Measurement
6	Problem Solving	Algebra and Functions, Measurement

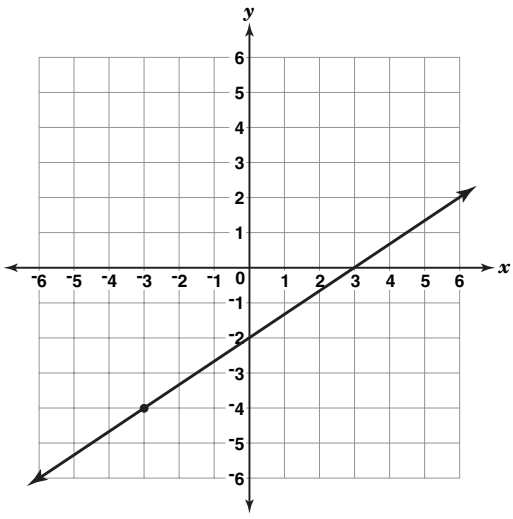
Test 7—Question 1: Algebra and Functions

1 Use your ruler as a straightedge.

On the coordinate plane below, graph the line with the slope of $\frac{2}{3}$ that passes through the point ($^{-}3$, $^{-}4$).



Exemplary Response:

- 

NOTE: If more than one line is drawn, a score of zero points will be awarded.

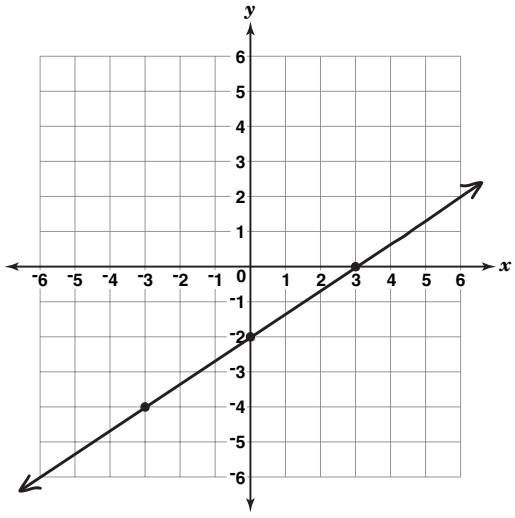
Rubric:

2 points	Exemplary response
1 point	Line with incorrect slope that passes through correct point OR Line with correct slope that passes through incorrect point OR No line drawn, at least 2 points plotted that would fall on the correct line, and no incorrect points plotted
0 points	Other

SCORE POINT 2

1 Use your ruler as a straightedge.

On the coordinate plane below, graph the line with the slope of $\frac{2}{3}$ that passes through the point $(^{-}3, ^{-}4)$.



Test 7—Question 1
Score Point 2

This response matches the exemplary response contained in the rubric. The student graphs a line with the correct slope that passes through the correct point. The response receives a Score Point 2.

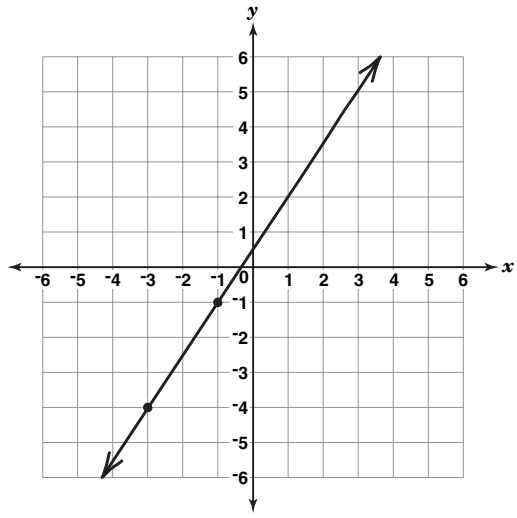
Test 7—Question 1
Score Point 1

This response shows a line that passes through the correct point, but has an incorrect slope. Therefore, this response receives a Score Point 1.

SCORE POINT 1

1 Use your ruler as a straightedge.

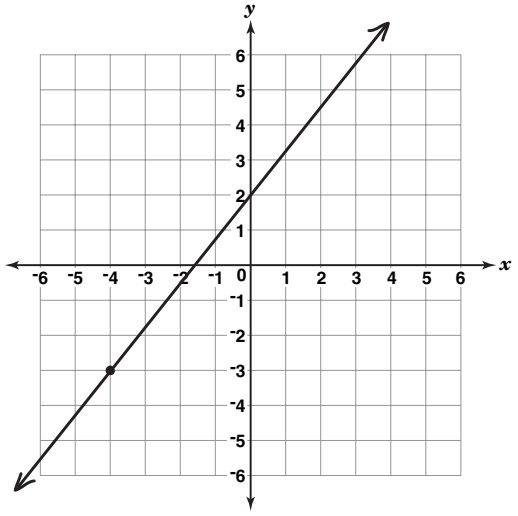
On the coordinate plane below, graph the line with the slope of $\frac{2}{3}$ that passes through the point $(^{-}3, ^{-}4)$.



SCORE POINT 0

1 Use your ruler as a straightedge.

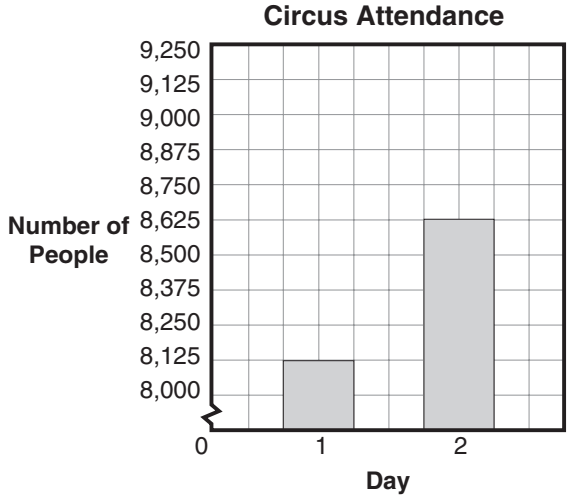
On the coordinate plane below, graph the line with the slope of $\frac{2}{3}$ that passes through the point ($^{-}3$, $^{-}4$).



Test 7—Question 1
Score Point 0

This response shows a line graphed with an incorrect slope that passes through an incorrect point. Therefore, this response receives a Score Point 0.

2 The bar graph below shows attendance at a circus over two days.



How many MORE people attended the circus on Day 2 than on Day 1?

Answer _____ people

On the lines below, explain why it appears that three times as many people attended the circus on Day 2 as on Day 1.

_____

_____

_____

_____

_____

Exemplary Response:

- 500

AND

- It appears that three times as many people attended the circus on day 2 as day 1 because the graph uses a break and does not show all of the data.

OR

- Other valid explanation

Rubric:

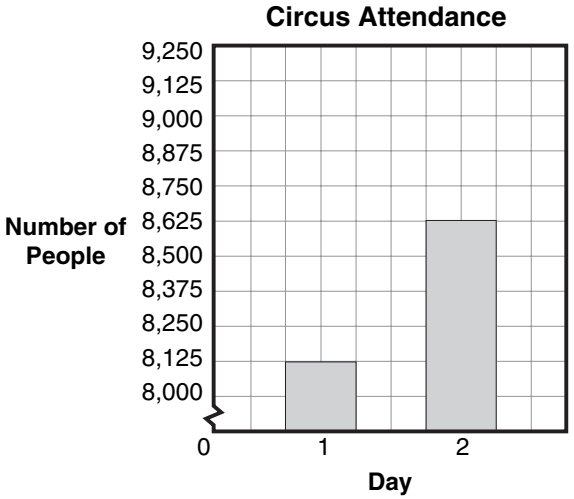
2 points	Exemplary response
1 point	One correct component
0 points	Other

Test 7—Question 2
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows the correct answer of 500 people and gives a valid explanation as to why the graph is misleading. The response receives a Score Point 2.

SCORE POINT 2

2 The bar graph below shows attendance at a circus over two days.



How many MORE people attended the circus on Day 2 than on Day 1?

Answer 500 people

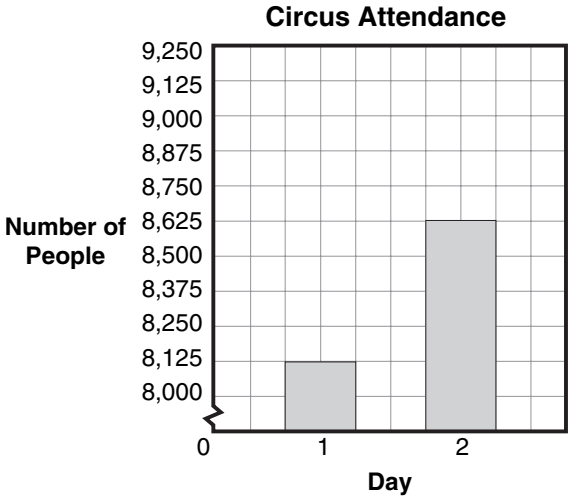
8625
- 8125
500

On the lines below, explain why it appears that three times as many people attended the circus on Day 2 as on Day 1.

It appears this way because the numbers on the y-axis jump from 0 to 8,000, which is represented by the zig-zag line between them.

SCORE POINT 1

2 The bar graph below shows attendance at a circus over two days.



How many MORE people attended the circus on Day 2 than on Day 1?

Answer 500 people

8625
-8125
0500

On the lines below, explain why it appears that three times as many people attended the circus on Day 2 as on Day 1.

It appears that way because the graph shows that more people attended on day 2, rather than day 1. The number of people go up by 125 on the graph.

Test 7—Question 2
Score Point 1

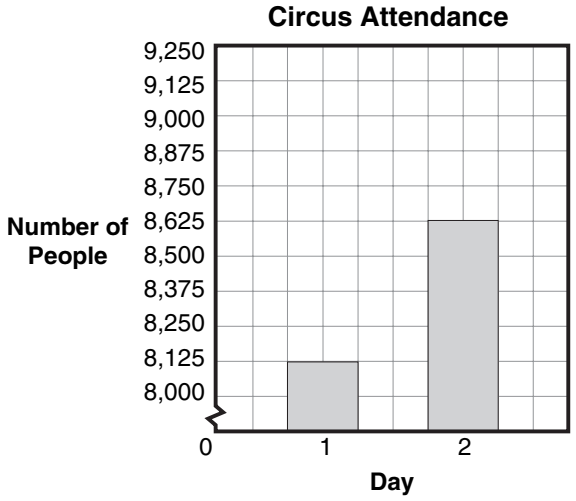
This response shows the correct answer of 500 people. However, the student gives an invalid explanation as to why the graph is misleading. Therefore, this response receives a Score Point 1.

Test 7—Question 2
Score Point 0

This response shows an incorrect answer and an invalid explanation. Therefore, this response receives a Score Point 0.

SCORE POINT 0

2 The bar graph below shows attendance at a circus over two days.



How many MORE people attended the circus on Day 2 than on Day 1?

Answer 8500 people

8625
-8125
8500

On the lines below, explain why it appears that three times as many people attended the circus on Day 2 as on Day 1.

because day 1 had 8125 people attend and day 2 had 8625 people attend.

Test 7—Question 3: Algebra and Functions

3 Blanca's aquarium has three types of fish. She has 14 tetras, 7 angelfish, and some mollies. She wants to purchase more mollies to add to her aquarium. If Blanca doubles the number of mollies, she will have a total of 37 fish.

On the line below, write an equation that can be used to determine the number of mollies (m) that Blanca had before she purchased more.

Equation _____

Now solve the equation you wrote to determine the number of mollies that Blanca had before she purchased more.

Answer _____ mollies

Exemplary Response:

- $2m + 21 = 37$

OR

- $2m = 16$

OR

- Other valid equation

AND

- 8 mollies

NOTE: Award 1 point for a correct solution based on an incorrect equation.

Rubric:

2 points	Exemplary response
1 point	One correct component
0 points	Other

Test 7—Question 3
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct equation and the correct answer of 8 mollies. Therefore, this response receives a Score Point 2.

SCORE POINT 2

3 Blanca's aquarium has three types of fish. She has 14 tetras, 7 angelfish, and some mollies. She wants to purchase more mollies to add to her aquarium. If Blanca doubles the number of mollies, she will have a total of 37 fish.

On the line below, write an equation that can be used to determine the number of mollies (m) that Blanca had before she purchased more.

Equation 37 = 2m + 21

Now solve the equation you wrote to determine the number of mollies that Blanca had before she purchased more.

37 = 2m + 21
16 = 2m
8 = m

Answer 8 mollies

Test 7—Question 3
Score Point 1

This response shows a correct equation. However, the student makes an error in computation when subtracting 21 from 37, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

SCORE POINT 1

3 Blanca's aquarium has three types of fish. She has 14 tetras, 7 angelfish, and some mollies. She wants to purchase more mollies to add to her aquarium. If Blanca doubles the number of mollies, she will have a total of 37 fish.

On the line below, write an equation that can be used to determine the number of mollies (m) that Blanca had before she purchased more.

Equation 14 + 7 + 2m = 37

Now solve the equation you wrote to determine the number of mollies that Blanca had before she purchased more.

14 + 7 + 2m = 37
21 + 2m = 37
21 21
2 ÷ 2m = 18 ÷ 2

Answer 9 mollies

SCORE POINT 0

3 Blanca's aquarium has three types of fish. She has 14 tetras, 7 angelfish, and some mollies. She wants to purchase more mollies to add to her aquarium. If Blanca doubles the number of mollies, she will have a total of 37 fish.

On the line below, write an equation that can be used to determine the number of mollies (m) that Blanca had before she purchased more.

Equation 14 + 7 = 37 ÷ 2 = m

Now solve the equation you wrote to determine the number of mollies that Blanca had before she purchased more.

Answer 25 mollies

14 + 7 = 37 ÷ 2 = m • 2

21 - 46

25

$^{1}18 \times 2 = 46$

$21 = 25$

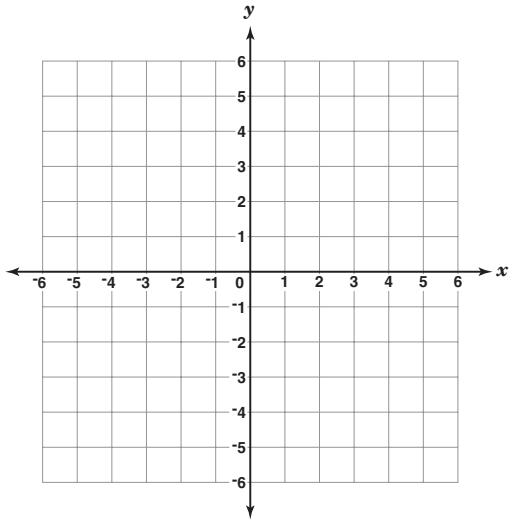
Test 7—Question 3
Score Point 0

This response shows an incorrect equation and an incorrect answer. Therefore, this response receives a Score Point 0.

Test 7—Question 4: Geometry

4 Use your ruler to solve this problem.

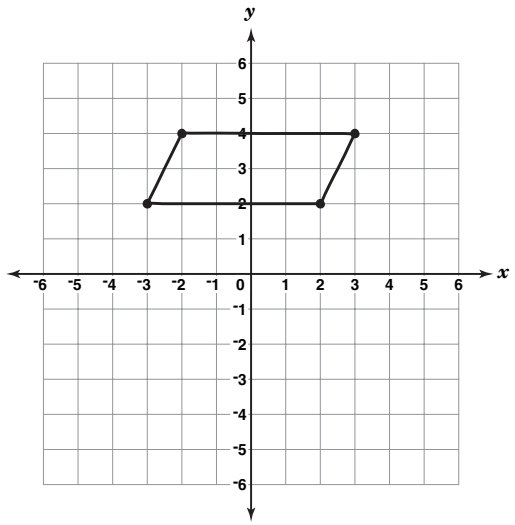
On the grid below, graph the points ($^{-}2$, 4), (3, 4), (2, 2), and ($^{-}3$, 2).



Now connect the points in the order listed above to make a polygon. On the line below, write the name of the polygon you drew.

Answer _____

Exemplary Response:

- 

AND

- parallelogram or quadrilateral

NOTE: Award credit only for correct name of figure drawn.

Rubric:

2 points	Exemplary response
1 point	One correct component
0 points	Other

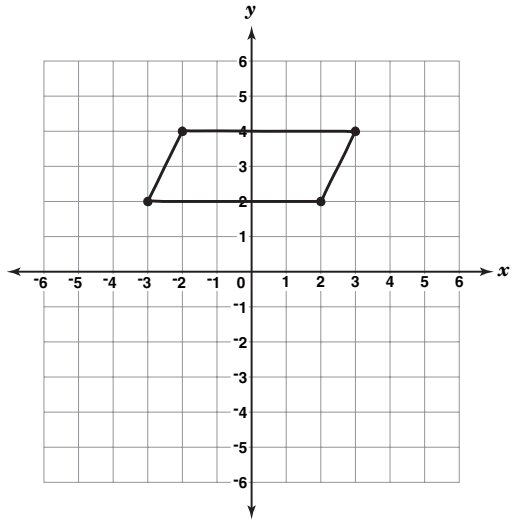
Test 7—Question 4
Score Point 2

This response matches the exemplary response contained in the rubric. The student graphs all four points correctly and gives the correct answer of parallelogram. The response receives a Score Point 2.

SCORE POINT 2

4 Use your ruler to solve this problem.

On the grid below, graph the points (⁻2, 4), (3, 4), (2, 2), and (⁻3, 2).



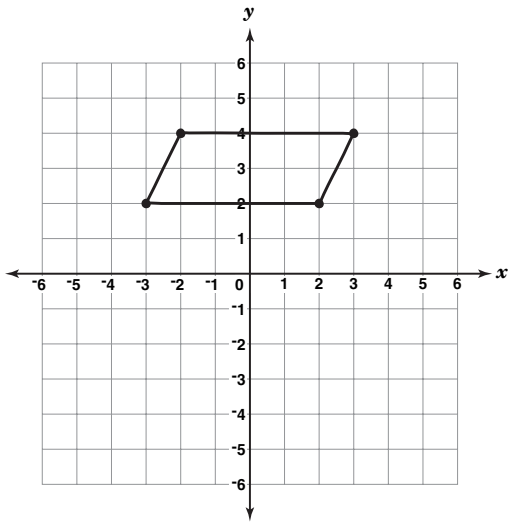
Now connect the points in the order listed above to make a polygon. On the line below, write the name of the polygon you drew.

Answer Parallelogram

SCORE POINT 1

4 Use your ruler to solve this problem.

On the grid below, graph the points (⁻2, 4), (3, 4), (2, 2), and (⁻3, 2).



Now connect the points in the order listed above to make a polygon. On the line below, write the name of the polygon you drew.

Answer Rombus

Test 7—Question 4
Score Point 1

This response shows all four points graphed correctly. However, the student incorrectly names the polygon a rhombus instead of a parallelogram or quadrilateral. Therefore, this response receives a Score Point 1.

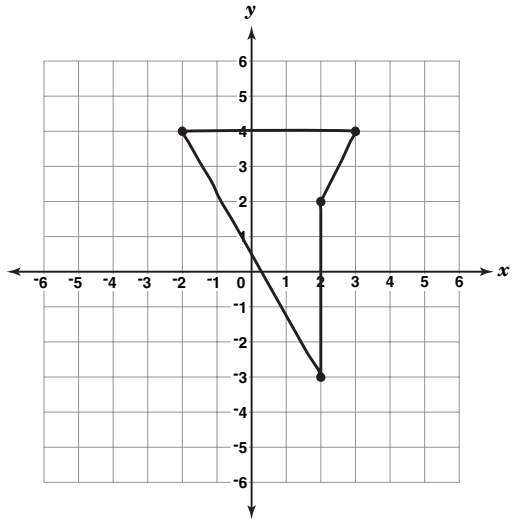
Test 7—Question 4
Score Point 0

This response shows only three points graphed correctly and an incorrect answer. Therefore, this response receives a Score Point 0.

SCORE POINT 0

4 Use your ruler to solve this problem.

On the grid below, graph the points (⁻2, 4), (3, 4), (2, 2), and (⁻3, 2).



Now connect the points in the order listed above to make a polygon. On the line below, write the name of the polygon you drew.

Answer triangle

Test 7—Question 5: Problem Solving

5 Last Saturday, Rachel shelled walnuts. She was paid $5.00 for the day, plus an additional $0.10 for each cup of walnuts she shelled.

If Rachel earned a total of $17.00, how many QUARTS of walnuts did Rachel shell?

Show All Work

Answer _____ quarts

Exemplary Response:

- 30 quarts

AND

- Correct complete process

Sample Process:

- $\$5.00 + \$0.10c = \$17.00$

  $\$0.10c = \$12.00$

  $c = 120$ cups

  4 cups = 1 quart

  120 cups ÷ 4 = 30 quarts

OR

- Other valid process

Rubric:

3 points	Exemplary response
2 points	Correct answer only OR Correct complete process; error in computation
1 point	Correct process for determining the total number of cups shelled
0 points	Other

Test 7—Question 5
Score Point 3

This response matches the exemplary response contained in the rubric. The student shows a correct complete process and gives the correct answer of 30 quarts. The response receives a Score Point 3.

SCORE POINT 3

5 Last Saturday, Rachel shelled walnuts. She was paid $5.00 for the day, plus an additional $0.10 for each cup of walnuts she shelled.

If Rachel earned a total of $17.00, how many QUARTS of walnuts did Rachel shell?

Show All Work

17.00
- 5
12.00

.10 | 12.00 = 120
120 cups

2 cups = 1 pint

2 | 120 = 60
60 pints

2 | 60 = 30 quarts

Answer 30 quarts

Test 7—Question 5
Score Point 2

This response shows a correct complete process. However, the student makes an error in computation when dividing 12 by 0.40, which results in an incorrect answer. Therefore, this response receives a Score Point 2.

SCORE POINT 2

5 Last Saturday, Rachel shelled walnuts. She was paid $5.00 for the day, plus an additional $0.10 for each cup of walnuts she shelled.

If Rachel earned a total of $17.00, how many QUARTS of walnuts did Rachel shell?

Show All Work

$17.00
- 5
$12.00

40 | 12.00 = 3.
120
0

40
3
1200

$.10 / 1 cup 1 cup = $.10

Answer 3 quarts

SCORE POINT 1

5 Last Saturday, Rachel shelled walnuts. She was paid $5.00 for the day, plus an additional $0.10 for each cup of walnuts she shelled.

If Rachel earned a total of $17.00, how many QUARTS of walnuts did Rachel shell?

Show All Work

17
- 5
12

1 pint = 2 cups
1 quart = 2 pints

10 | 12

2
× 2
4

120
10 | 1200
- 10
20
- 20
00
- 0
0

120
× 4
480

Answer 480 quarts

Test 7—Question 5 Score Point 1

This response shows only a correct process for determining the total number of cups shelled. Therefore, the response receives a Score Point 1.

SCORE POINT 0

5 Last Saturday, Rachel shelled walnuts. She was paid $5.00 for the day, plus an additional $0.10 for each cup of walnuts she shelled.

If Rachel earned a total of $17.00, how many QUARTS of walnuts did Rachel shell?

Show All Work

5
× 3
15

15
+ 2
17.00$
- 2
15.00

so she did 2 Quarts

4 pints

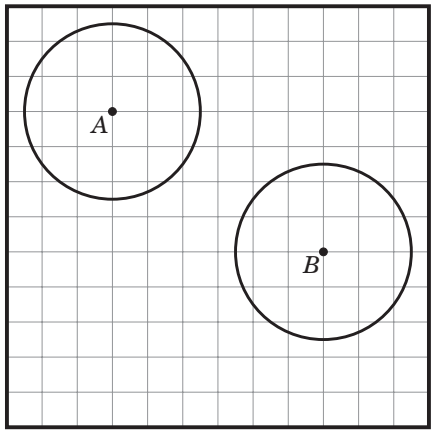
Answer 2 quarts

Test 7—Question 5 Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

Test 7—Question 6: Geometry

6 Circle A has been translated 6 units to the right and 4 units down to create circle B, as shown on the grid below.



The circumference of circle A is 15.7 units.

What is the circumference, in units, of circle B?

Answer _____ units

On the lines below, explain how you determined the answer.

Exemplary Response:

- 15.7 units

AND

- The circles have the same circumference because when a figure is translated, the figures are congruent.

OR

- Other valid explanation

Rubric:

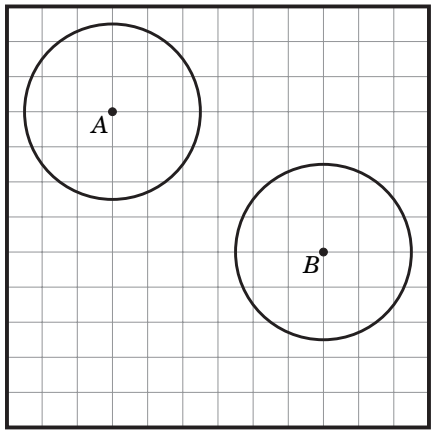
2 points	Exemplary response
1 point	One correct component
0 points	Other

Test 7—Question 6
Score Point 2

This response matches the exemplary response contained in the rubric. The student gives the correct answer of 15.7 units and a valid explanation for the answer. The response receives a Score Point 2.

SCORE POINT 2

6 Circle A has been translated 6 units to the right and 4 units down to create circle B, as shown on the grid below.



The circumference of circle A is 15.7 units.

What is the circumference, in units, of circle B?

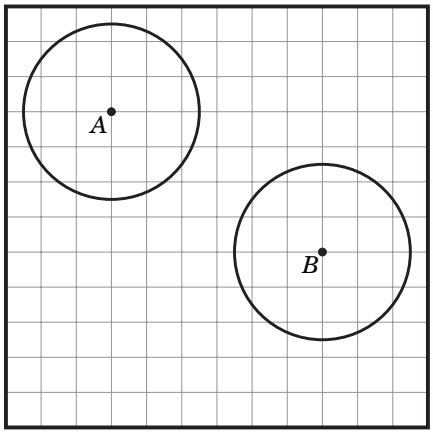
Answer 15.7 units

On the lines below, explain how you determined the answer.

Since the circle's have been translated they are the same shape and size as each other. So if one is 15.7 so is the other.

SCORE POINT 1

6 Circle A has been translated 6 units to the right and 4 units down to create circle B, as shown on the grid below.



The circumference of circle A is 15.7 units.

What is the circumference, in units, of circle B?

Answer 15.7 units

On the lines below, explain how you determined the answer.

Test 7—Question 6
Score Point 1

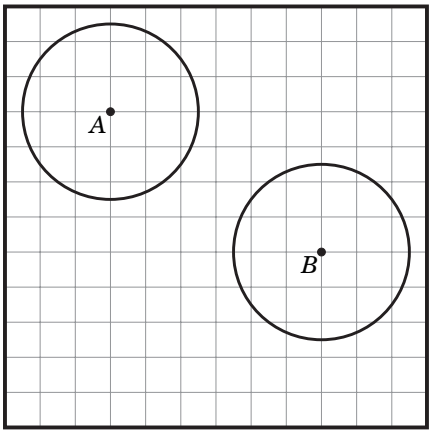
This response shows the correct answer of 15.7 units. However, the student does not give an explanation for the answer. Therefore, this response receives a Score Point 1.

Test 7—Question 6
Score Point 0

This response shows an incorrect answer and an invalid explanation. Therefore, this response receives a Score Point 0.

SCORE POINT 0

6 Circle A has been translated 6 units to the right and 4 units down to create circle B, as shown on the grid below.



The circumference of circle A is 15.7 units.

What is the circumference, in units, of circle B?

Answer 5.7 units

15.7
-10.0
5.7

On the lines below, explain how you determined the answer.

Take the distance moved from the circumference.

Test 7—Question 7: Number Sense

7 Evaluate: $9^3 - 5^4$

Show All Work

Answer _____

Exemplary Response:

- 104

Sample Process:

- $9 \times 9 \times 9 = 729$

  $5 \times 5 \times 5 \times 5 = 625$

  $729 - 625 = 104$

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct complete process; error in computation
0 points	Other

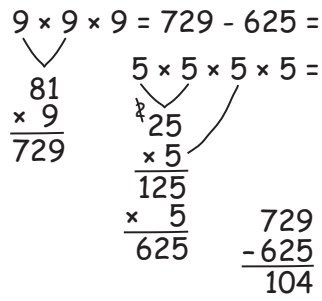
Test 7—Question 7
Score Point 2

This response matches the exemplary response contained in the rubric. The student gives the correct answer of 104. The response receives a Score Point 2.

SCORE POINT 2

7 Evaluate: $9^3 - 5^4$

Show All Work



Answer 104

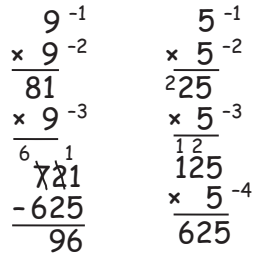
Test 7—Question 7
Score Point 1

This response shows a correct complete process. However, the student makes an error in computation when calculating 9^3, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

SCORE POINT 1

7 Evaluate: $9^3 - 5^4$

Show All Work



Answer 96

SCORE POINT 0

7 Evaluate: $9^3 - 5^4$

Show All Work

$9 \times 9 = 81$

$81 \times 9 = 729$

Answer 729

Test 7—Question 7
Score Point 0

This response shows an incomplete process and an incorrect answer. Therefore, this response receives a Score Point 0.

Test 8—Question 1: Algebra and Functions

1 Evaluate the following expression for $y = 3$:

$$5y - 24 \div y + 10$$

Show All Work

Answer _____

Exemplary Response:

- 17

Sample Process:

- $5y - 24 \div y + 10$
  $= 5(3) - 24 \div 3 + 10$
  $= 15 - 24 \div 3 + 10$
  $= 15 - 8 + 10$
  $= 7 + 10$
  $= 17$

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct complete process; error in computation
0 points	Other

SCORE POINT 2

1 Evaluate the following expression for $y = 3$:

$$5y - 24 \div y + 10$$

Show All Work

$5 \cdot 3 - 24 \div 3 + 10$
$15 - 8 + 10$
$7 + 10$
17

$3 \times 5 = 15$

$3\overline{)24} = 8$

$10 + 7 = 17$

Answer 17

Test 8—Question 1 Score Point 2

This response matches the exemplary response contained in the rubric. The student gives the correct answer of 17. The response receives a Score Point 2.

SCORE POINT 1

1 Evaluate the following expression for $y = 3$:

$$5y - 24 \div y + 10$$

Show All Work

PEMDAS

$5 \cdot 3 - 24 \div 3 + 10$ 2
$15 - 24 \div 3 + 10$ 3
$15 - 8 + 10$ 4
$6 + 10$ 5
16 6
7
8

Answer 16

Test 8—Question 1 Score Point 1

This response shows a correct complete process. However, the student makes an error in computation when subtracting 8 from 15, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

Test 8—Question 1
Score Point 0

This response shows an incorrect process for the order of operations and an incorrect answer. Therefore, this response receives a Score Point 0.

SCORE POINT 0

1 Evaluate the following expression for $y = 3$:

$$5y - 24 \div y + 10$$

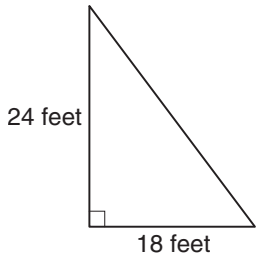
Show All Work

$5 \cdot 3 - 24 \div 3 + 10$
$15 - 24 \div 3 + 10$
$-19 \div 3 + 10$
$-6.1 + 10$

Answer 16.1

Test 8—Question 2: Problem Solving

2 A diagram of Kayla's backyard is shown below.



Kayla wants to put a fence around her backyard. A 6-foot section of pre-assembled fencing costs $19.97 with tax included.

What is the cost of the fencing Kayla needs to fence her entire backyard?

Show All Work

Answer $ _____

Exemplary Response:

- $239.64

AND

- Correct complete process

Sample Process:

- $c^2 = 18^2 + 24^2$
  $= 324 + 576$
  $= 900$
  $= \sqrt{900}$
  $= 30$

$18 + 24 + 30 = 72$ feet

Number of packages of fencing: $72 \div 6 = 12$

$12 \times \$19.97 = \$239.64$

OR

- Other valid process

Rubric:

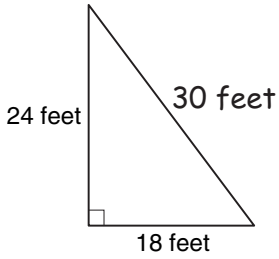
3 points	Exemplary response
2 points	Correct answer only OR Correct complete process; error in computation
1 point	Correct process for determining length of missing side
0 points	Other

SCORE POINT 3

2 A diagram of Kayla's backyard is shown below.

$24^2 + 18^2 = 900^2$

$30\overline{)900}$ → 30



Kayla wants to put a fence around her backyard. A 6-foot section of pre-assembled fencing costs $19.97 with tax included.

What is the cost of the fencing Kayla needs to fence her entire backyard?

Show All Work

24
+ 18
+ 30
12

$6\overline{)72}$ → 12

12
× 19.97
239.64

Answer $ 239.64

Test 8—Question 2
Score Point 3

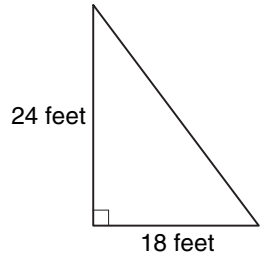
This response matches the exemplary response contained in the rubric. The student shows a correct complete process and gives the correct answer of $239.64. The response receives a Score Point 3.

Test 8—Question 2
Score Point 2

This response shows a correct answer of $239.64. However, the student does not show a correct complete process. Therefore, this response receives a Score Point 2.

SCORE POINT 2

2 A diagram of Kayla's backyard is shown below.



Kayla wants to put a fence around her backyard. A 6-foot section of pre-assembled fencing costs $19.97 with tax included.

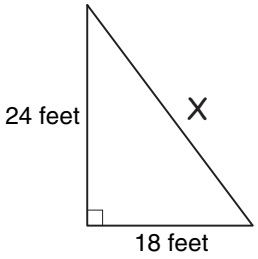
What is the cost of the fencing Kayla needs to fence her entire backyard?

Show All Work

Answer $ 239.64

SCORE POINT 1

2 A diagram of Kayla's backyard is shown below.



Kayla wants to put a fence around her backyard. A 6-foot section of pre-assembled fencing costs $19.97 with tax included.

What is the cost of the fencing Kayla needs to fence her entire backyard?

Show All Work

1. $A^2 + B^2 = C^2$
   $18^2 + 24^2 = C^2$
   $324 + 576 = 900$
   $\sqrt{900} = 30$

2. $6\overline{)30}$ → 5

3. 19.97 × 5 → $99.85

Answer $ 99 85

Test 8—Question 2
Score Point 1

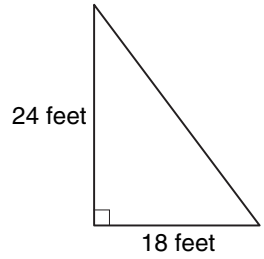
This response shows only a correct process for determining the length of the missing side of the triangle. Therefore, this response receives a Score Point 1.

Test 8—Question 2
Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

SCORE POINT 0

2 A diagram of Kayla's backyard is shown below.



Kayla wants to put a fence around her backyard. A 6-foot section of pre-assembled fencing costs $19.97 with tax included.

What is the cost of the fencing Kayla needs to fence her entire backyard?

Show All Work

18 × 24 = 432
432 ÷ 6 = 72
72 × 19.97 = 1437.84

Answer $ 1437.84

Test 8—Question 3: Data Analysis and Probability

3 Randy surveyed five of his friends to determine how many pets each of them has. His results are shown in the table below.

Pet Survey

Student	Number of Pets
Maggie	5
LeAnn	4
Roberta	2
Hannah	3
Steven	3

Roberta's dog had a litter of 6 puppies after Randy's survey.

On the lines below, explain how adding the puppies would have affected the median of Randy's data.

On the lines below, explain how adding the puppies would have affected the mode of Randy's data.

Exemplary Response:

- The median will increase, since Roberta had the least number of pets, and now she has the most.

OR

- Other valid explanation

AND

- The mode does not change.

OR

- Other valid explanation

Rubric:

2 points	Exemplary response
1 point	One correct component
0 points	Other

SCORE POINT 2

3 Randy surveyed five of his friends to determine how many pets each of them has. His results are shown in the table below.

Pet Survey

Student	Number of Pets
Maggie	5
LeAnn	4
Roberta	2
Hannah	3
Steven	3

Roberta's dog had a litter of 6 puppies after Randy's survey.

On the lines below, explain how adding the puppies would have affected the median of Randy's data.

The median would have been a little bit higher because Robeta has more pets.

On the lines below, explain how adding the puppies would have affected the mode of Randy's data.

It would have stayed the same because 3 is still the number that is on there the most.

Test 8—Question 3
Score Point 2

This response matches the exemplary response contained in the rubric. The student gives two valid explanations. The response receives a Score Point 2.

Test 8—Question 3
Score Point 1

This response shows only a valid explanation for the effect on the median. Therefore, this response receives a Score Point 1.

SCORE POINT 1

3 Randy surveyed five of his friends to determine how many pets each of them has. His results are shown in the table below.

Pet Survey

Student	Number of Pets
Maggie	5
LeAnn	4
Roberta	2
Hannah	3
Steven	3

Roberta's dog had a litter of 6 puppies after Randy's survey.

On the lines below, explain how adding the puppies would have affected the median of Randy's data.

If you would have added the puppies then the median would be a different number. It would be bigger.

On the lines below, explain how adding the puppies would have affected the mode of Randy's data.

The mode would be different because it would be a bigger number too.

SCORE POINT 0

3 Randy surveyed five of his friends to determine how many pets each of them has. His results are shown in the table below.

Pet Survey

Student	Number of Pets
Maggie	5
LeAnn	4
Roberta	2
Hannah	3
Steven	3

Roberta's dog had a litter of 6 puppies after Randy's survey.

On the lines below, explain how adding the puppies would have affected the median of Randy's data.

There would've been a different median.

On the lines below, explain how adding the puppies would have affected the mode of Randy's data.

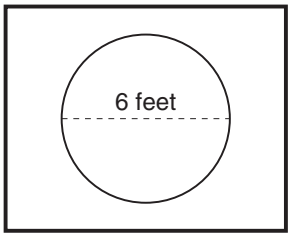
There would've been a different mode.

Test 8—Question 3
Score Point 0

This response shows two invalid explanations. Therefore, this response receives a Score Point 0.

Test 8—Question 4: Problem Solving

4 Jenna has a rectangular garden with an area of 80 square feet. In the middle of her garden, she set aside a circular area with a diameter of 6 feet to plant rosebushes.



What is the area, in square feet, of Jenna's garden that will NOT have rosebushes planted?

Show All Work

Answer _____ square feet

Exemplary Response:

- 51.74 square feet

AND

- Correct complete process

Sample Process:

- $A = 80 - \pi r^2$
  $= 80 - \pi(3^2)$
  $= 80 - 9 \times 3.14$
  $= 80 - 28.26$
  $= 51.74$

OR

- Other valid process

Rubric:

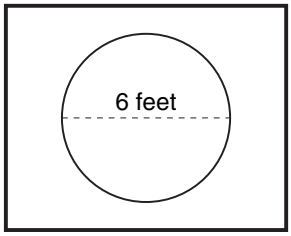
3 points	Exemplary response
2 points	Correct answer only OR Correct complete process; error in computation
1 point	Correct process for determining the area of the circle
0 points	Other

Test 8—Question 4
Score Point 3

This response matches the exemplary response contained in the rubric. The student shows a correct complete process and gives the correct answer of 51.74 square feet. The response receives a Score Point 3.

SCORE POINT 3

4 Jenna has a rectangular garden with an area of 80 square feet. In the middle of her garden, she set aside a circular area with a diameter of 6 feet to plant rosebushes.



What is the area, in square feet, of Jenna's garden that will NOT have rosebushes planted?

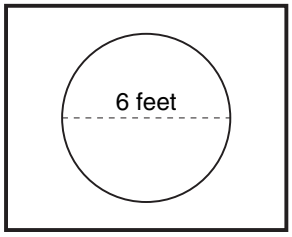
Show All Work

$3.14 \times 3^2 = 28.26$ 80 - 28.26 =

Answer 51.74 square feet

SCORE POINT 2

4 Jenna has a rectangular garden with an area of 80 square feet. In the middle of her garden, she set aside a circular area with a diameter of 6 feet to plant rosebushes.



What is the area, in square feet, of Jenna's garden that will NOT have rosebushes planted?

Show All Work

$2\overline{)6}$ 3

80.00
- 20.26
59.74

6
3 × 3.14
× 3 ↓
9 × 3.14 =
20.26

Answer 59.74 square feet

Test 8—Question 4
Score Point 2

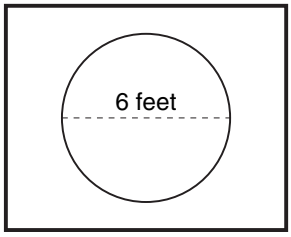
This response shows a correct complete process. However, the student makes an error in computation when multiplying 9 and 3.14, which results in an incorrect answer. Therefore, this response receives a Score Point 2.

Test 8—Question 4
Score Point 1

This response shows only a correct process for finding the area of the circle. Therefore, this response receives a Score Point 1.

SCORE POINT 1

4 Jenna has a rectangular garden with an area of 80 square feet. In the middle of her garden, she set aside a circular area with a diameter of 6 feet to plant rosebushes.



What is the area, in square feet, of Jenna's garden that will NOT have rosebushes planted?

Show All Work

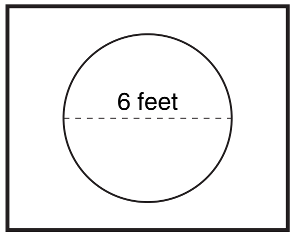
$A = \pi r^2$

$A = \pi \cdot 3 \cdot 3 = 28.26$

Answer 28.26 square feet

SCORE POINT 0

4 Jenna has a rectangular garden with an area of 80 square feet. In the middle of her garden, she set aside a circular area with a diameter of 6 feet to plant rosebushes.



What is the area, in square feet, of Jenna's garden that will NOT have rosebushes planted?

Show All Work

~~80 × 6~~

80 − 6 = 74

Answer 74 square feet

Test 8—Question 4 Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

Test 8—Question 5: Measurement

5 The average height of a Grey Kangaroo is 1.75 yards tall. Sean is 5 feet 1 inch tall.

How many more INCHES does Sean need to grow to reach the average height of the Grey Kangaroo?

Show All Work

Answer _____ inches

Exemplary Response:

- 2 inches

Sample Process:

- 1.75 yards × 3 = 5.25 feet
  5.25 feet × 12 = 63 inches
  5 feet × 12 = 60 inches
  60 + 1 = 61 inches
  63 − 61 = 2 inches

OR

- Other valid process

Rubric:

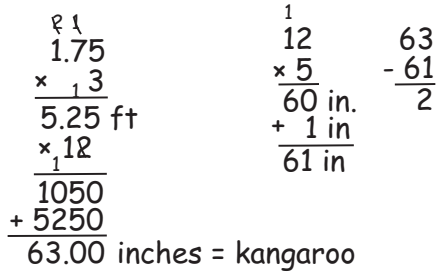
2 points	Exemplary response
1 point	Correct complete process; error in computation
0 points	Other

SCORE POINT 2

5 The average height of a Grey Kangaroo is 1.75 yards tall. Sean is 5 feet 1 inch tall.

How many more INCHES does Sean need to grow to reach the average height of the Grey Kangaroo?

Show All Work



Answer 2 inches

Test 8—Question 5 Score Point 2

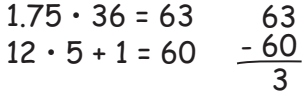
This response matches the exemplary response contained in the rubric. The student gives the correct answer of 2 inches. The response receives a Score Point 2.

SCORE POINT 1

5 The average height of a Grey Kangaroo is 1.75 yards tall. Sean is 5 feet 1 inch tall.

How many more INCHES does Sean need to grow to reach the average height of the Grey Kangaroo?

Show All Work



Answer 3 inches

Test 8—Question 5 Score Point 1

This response shows a correct complete process. However, the student makes an error in computation when calculating the height of Sean, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

Test 8—Question 5
Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

SCORE POINT 0

5 The average height of a Grey Kangaroo is 1.75 yards tall. Sean is 5 feet 1 inch tall.

How many more INCHES does Sean need to grow to reach the average height of the Grey Kangaroo?

Show All Work

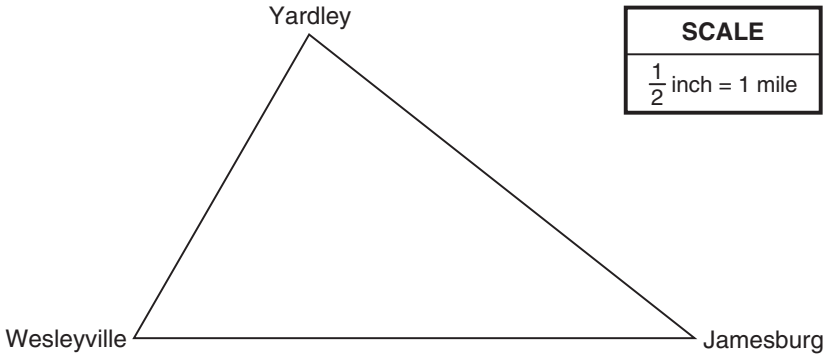
$$\begin{array}{r} 5.1 \\ -\ 1.75 \\ \hline 3.35 \end{array}$$

Answer 3.35 inches

Test 8—Question 6: Problem Solving

6 Use your ruler to solve this problem.

Drew is a delivery driver. This morning, he drove from Wesleyville to Yardley and then to Jamesburg. He then drove from Jamesburg straight to Wesleyville, as shown in the diagram below.



Drew's average speed was 30 miles per hour.

How many MINUTES did Drew spend driving?

Show All Work

Answer _____ minutes

Exemplary Response:

- 40 minutes

AND

- Correct complete process

Sample Process:

- $W \rightarrow Y = 2.5$ inches

  $2.5 \times 2 = 5$ miles

  $Y \rightarrow J = 3.5$ inches

  $3.5 \times 2 = 7$ miles

  $J \rightarrow W = 4$ inches

  $4 \times 2 = 8$ miles

  $5 + 7 + 8 = 20$ miles

- 30 miles per hour $= \frac{1}{2}$ mile per minute

- $d = rt$

  $20 = \frac{1}{2}t$

  $40 = t$

OR

- Other valid process

NOTES: Allow $\pm \frac{1}{4}$ inch for measurements.

Allow answers in range from 36 minutes to 43 minutes.

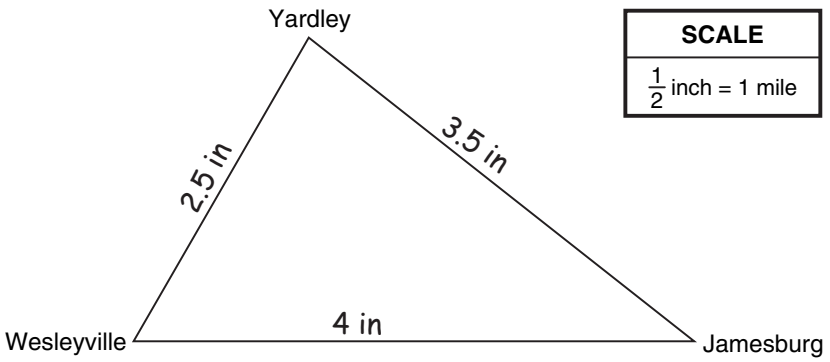
Rubric:

2 points	Exemplary response
1 point	Correct answer only OR Correct complete process; error in computation OR Correct process for determining the number of miles traveled
0 points	Other

SCORE POINT 2

6 Use your ruler to solve this problem.

Drew is a delivery driver. This morning, he drove from Wesleyville to Yardley and then to Jamesburg. He then drove from Jamesburg straight to Wesleyville, as shown in the diagram below.



Drew's average speed was 30 miles per hour.

How many MINUTES did Drew spend driving?

Show All Work

3.5/.5 = 7

4/.5 = 8

2.5/.5 = 5 +

20 mi/.5 = 40 mi

30 mph
20 mi
.5 mi/min

Answer 40 minutes

Test 8—Question 6
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct complete process and gives the correct answer of 40 minutes. The response receives a Score Point 2.

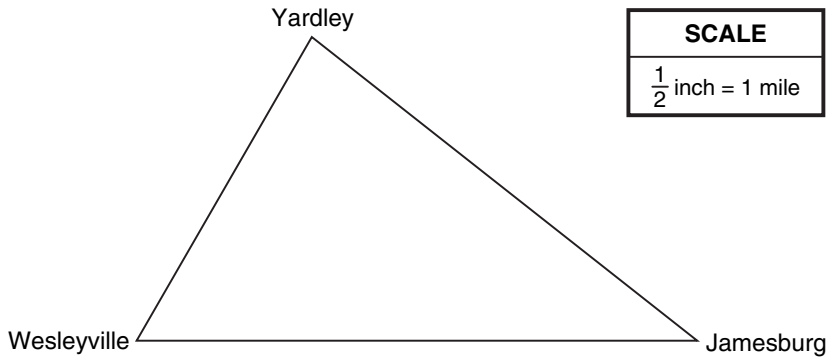
Test 8—Question 6
Score Point 1

This response shows a correct complete process. However, the student makes an error in computation when dividing 20 by 30, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

SCORE POINT 1

6 Use your ruler to solve this problem.

Drew is a delivery driver. This morning, he drove from Wesleyville to Yardley and then to Jamesburg. He then drove from Jamesburg straight to Wesleyville, as shown in the diagram below.



Drew's average speed was 30 miles per hour.

How many MINUTES did Drew spend driving?

Show All Work

Wesleyville to Yardley
2.5 in = 5 miles
Yardley to Jamesburg
3.5 in = 7 miles
Jamesburg to Wesleyville
4 in. = 8 miles

5
+ 7
8
20 miles

d = r • t
d = 20 miles
r = 30 mph
t =

20 = 30 • t
t • 30 = 20
÷30 ÷30
t = 1.5
1.5 hrs

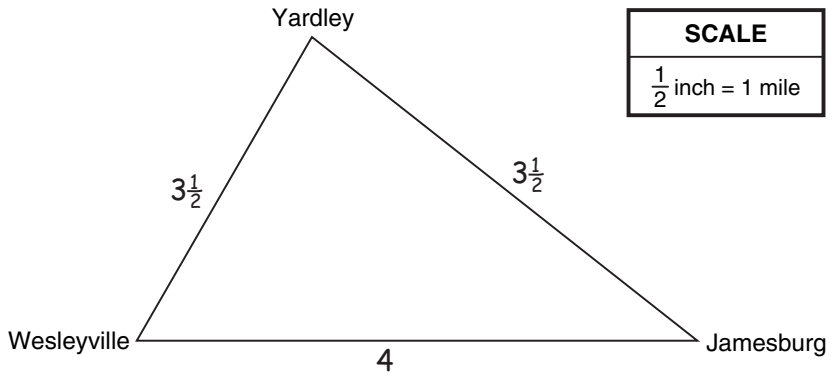
1 hr = 60 min
60
+ 30
90

Answer 90 minutes

SCORE POINT 0

6 Use your ruler to solve this problem.

Drew is a delivery driver. This morning, he drove from Wesleyville to Yardley and then to Jamesburg. He then drove from Jamesburg straight to Wesleyville, as shown in the diagram below.



Drew's average speed was 30 miles per hour.

How many MINUTES did Drew spend driving?

Show All Work

$3\frac{1}{2} + 3\frac{1}{2} = 7$

$7 + 4 = 11$

30×11

330 mins

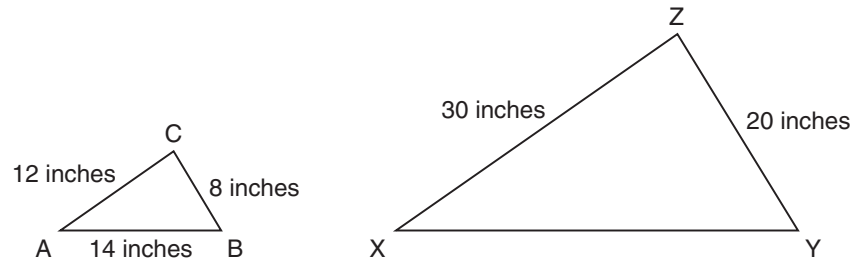
Answer 330 minutes

Test 8—Question 6
Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

Test 8—Question 7: Measurement

7 Triangle ABC is similar to triangle XYZ, as shown in the diagram below.



What is the length, in inches, of side $\overline{XY}$?

Show All Work

Answer _____ inches

Exemplary Response:

- 35 inches

Sample Process:

- $\frac{12}{30} = \frac{14}{x}$

$12x = 420$

$x = 35$

OR

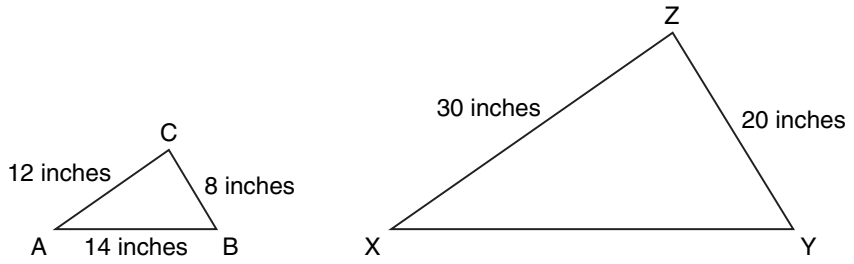
- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct complete process; error in computation
0 points	Other

SCORE POINT 2

7 Triangle ABC is similar to triangle XYZ, as shown in the diagram below.



What is the length, in inches, of side $\overline{XY}$?

Show All Work

$\frac{30}{12} = 2.5$ $\frac{20}{8} = 2.5$ *SO* $14 \times 2.5 = 35$

Answer 35 inches

Test 8—Question 7
Score Point 2

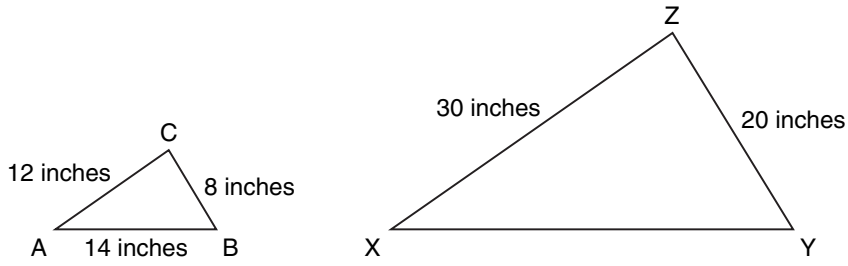
This response matches the exemplary response contained in the rubric. The student gives the correct answer of 35 inches. The response receives a Score Point 2.

Test 8—Question 7
Score Point 1

This response shows a correct complete process. However, the student makes an error in computation when solving the proportion, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

SCORE POINT 1

7 Triangle ABC is similar to triangle XYZ, as shown in the diagram below.



What is the length, in inches, of side $\overline{XY}$?

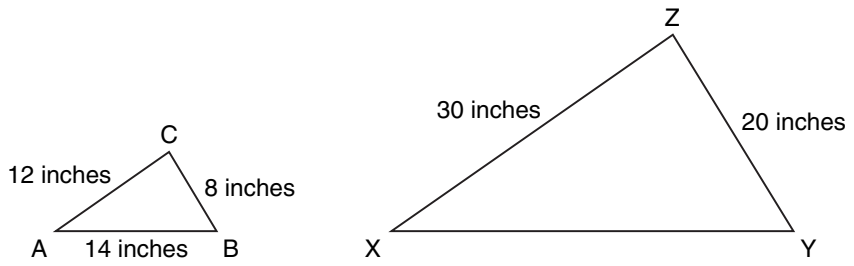
Show All Work

$$\frac{12}{30} = \frac{14}{X}$$

Answer 32 inches

SCORE POINT 0

7 Triangle ABC is similar to triangle XYZ, as shown in the diagram below.



What is the length, in inches, of side $\overline{XY}$?

Show All Work

$$\begin{array}{r} 12 \\ +\ 2 \\ \hline 14 \end{array} \qquad \begin{array}{r} 30 \\ +\ 2 \\ \hline 32 \text{ in} \end{array}$$

Answer 32 inches

Test 8—Question 7
Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

NOTES

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Grade 8
Mathematics

Fall 2007
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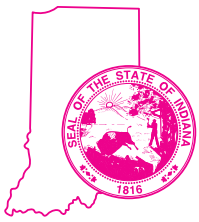

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